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EXAMINER	
TURNER, SAMUEL A	
ART UNIT	**PAPER NUMBER**
2877	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/20/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/789,328	RAFAC, ROBERT J.	
	Examiner	Art Unit	
	Samuel A. Turner	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-165* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,13-18,25-30,37-42,49-54,61-151,158,159,162,163 and 165* is/are rejected.

7)☒ Claim(s) *7-12,19-24,31-36,43-48,55-60,152-157,160,161 and 164* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 August 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/16/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date: _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Title

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Abstract

The abstract of the disclosure is objected to because the abstract must be limited to a range of 50 to 150 words.. Correction is required. See MPEP § 608.01(b).

Drawings

The drawings are objected to because figures 1-3 must be labeled as prior art. In figure 8A fw25% should be FW25% Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application.

Replacement Drawing Sheets

Drawing changes must be made by presenting replacement sheets which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments section, or remarks, section of the amendment paper. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). A replacement sheet must include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of the amended drawing(s) must not be labeled as "amended." If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified.

Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and within the top margin.

Annotated Drawing Sheets

A marked-up copy of any amended drawing figure, including annotations indicating the changes made, may be submitted or required by the examiner. The annotated drawing sheet(s) must be clearly labeled as "Annotated Sheet" and must be presented in the amendment or remarks section that explains the change(s) to the drawings.

Timing of Corrections

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.85(a). Failure to take corrective action within the set period will result in ABANDONMENT of the application.

If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings MUST be filed within the THREE MONTH shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may NOT be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability.

Claim Objections

Applicant is advised that should claims 37-48 and 109-120 be found allowable, claims 61-72 and 133-144, respectively, will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

In claim 85 the phrase "for calculating calculate an actual bandwidth parameter" must be corrected.

Claim Rejections - 35 USC § 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 61-144 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 61, there is no antecedent basis for "the optical bandwidth detector". There is antecedent basis for -- the optical bandwidth monitor--. Claims 62-72 dependent on claim 61 and therefor are also included in the rejection.

In independent claims 73, 85, 97, 109, 121, and 133; the phrase "an actual bandwidth calculation means, utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitoring means, for calculating an actual bandwidth parameter" is confusing. In a means-plus-function analysis of this limitation "an actual bandwidth calculation means" is clearly the means and "for calculating an actual bandwidth parameter" is the claimed function. However, the clause "utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical

bandwidth monitoring means" does not appear to be included as part of the limiting functional language in this means-plus-function limitation. Thus the resulting claims do not clearly set forth the metes and bounds of the patent protection desired. Claims 74-74, 86-97, 98-108, 110-120, 122-132, and 134-144 are dependent on claims 73, 85, 97, 109, 121, and 133 and therefor are also included in the rejection.

Claim Rejections - 35 USC § 101

35 U.S.C. § 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 145 is rejected under 35 U.S.C. § 101 because the claimed invention is directed to non-statutory subject matter.

The claims are directed to a judicial exception; as such, pursuant to the Interim Guidelines on Patent Eligible Subject Matter (MPEP 2106)), the claims must have either physical transformation and/or a useful, concrete and tangible result. The claims fail to include transformation from one physical state to another. Although, the claims appear useful and concrete, there does not appear to be a tangible result claimed. Merely analyzing, calculating, determining, selecting, etc. would not appear to be sufficient to constitute a tangible result, since the outcome of the analyzing, calculating, determining, selecting, etc. step has not been used in a disclosed practical application nor made available in such a manner that its

usefulness in a disclosed practical application can be realized. As such, the subject matter of the claims is considered an abstract idea and is not patent eligible.

Claim 145 includes the limitation of "calculating an actual bandwidth parameter" which does not provide a physical transformation and/or a useful, concrete and tangible result. While this step appears useful and concrete the analyzed, calculated, determined, selected, etc result is abstract because nothing is done with the result(saved, displayed, or used).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 13-15, 25-27, 37-39, 49-51, 61-63, 73-75, 85-87, 97-99, 109-111, 121-123, 133-135, 145-148, 158-159, 162, 163, and 165 are rejected under 35 U.S.C. § 102(b) as being clearly anticipated by Das et al(6,317,448).

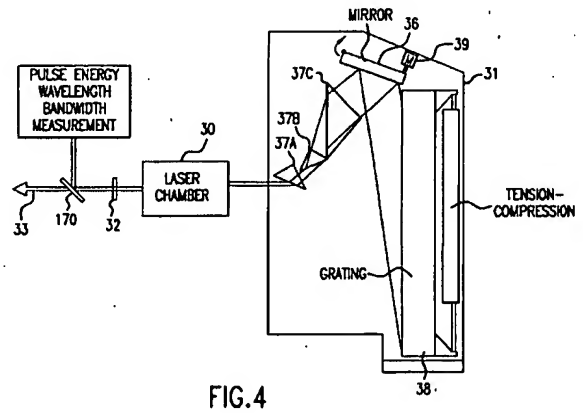


FIG.4

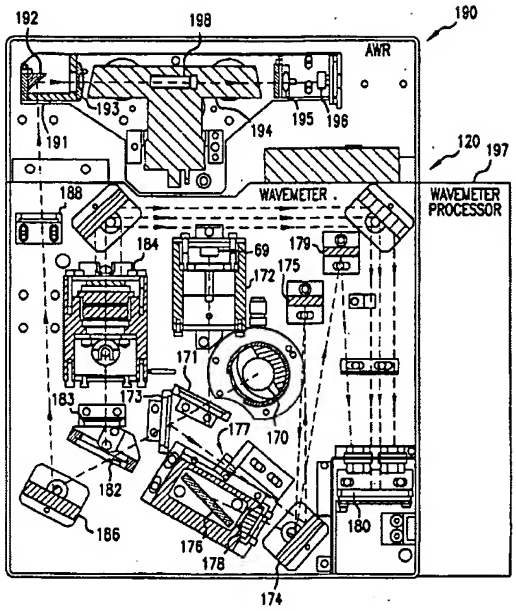


FIG.10

With regard to claim 1, Das et al teach a bandwidth meter(Fig. 10) for measuring the bandwidth of a spectrum of light emitted from a laser input(Fig. 4, 30) to the bandwidth meter comprising:

an optical bandwidth monitor(Fig. 10, 120) providing a first output(Fig. 10; 184,80) representative of a first parameter which is indicative of the bandwidth of the light emitted from the laser and a second output(Fig. 10; 176,80) representative of a second parameter which is indicative of the bandwidth of the light emitted from the laser; and,

an actual bandwidth calculation apparatus(Fig. 10, 197) utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor, to calculate an actual bandwidth parameter(column 6, line 48+).

With regard to claim 13, Das et al teach a bandwidth meter(Fig. 10) for measuring the bandwidth of a spectrum of light emitted from a laser input(Fig. 4, 30) to the bandwidth meter comprising:

an optical bandwidth monitor(Fig. 10, 120) providing a first output(Fig. 10; 184,80) representative of a first spectrum width measurement as measured by the optical bandwidth monitor and a second output(Fig. 10; 176,80) representative of a second spectrum width measurement measured by the optical bandwidth monitor; and,

an actual bandwidth calculation apparatus(Fig. 10, 197) utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor, to calculate an actual bandwidth parameter(column 6, line 48+).

With regard to claim 25, Das et al teach a photolithography light source(column 12, lines 19-23) comprising:

a bandwidth meter(Fig. 10) for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

an optical bandwidth monitor(Fig. 10, 120) providing a first output(Fig. 10; 184,80) representative of a first parameter which is indicative of the bandwidth of the light emitted from the laser and a second output(Fig. 10; 176,80) representative of a second parameter which is indicative of the bandwidth of the light emitted from the laser; and,

an actual bandwidth calculation apparatus(Fig. 10, 197) utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor, to calculate an actual bandwidth parameter(column 6, line 48+).

With regard to claim 37, Das et al teach a photolithography light source(column 12, lines 19-23) comprising:

a bandwidth meter(Fig. 10) for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

an optical bandwidth monitor(Fig. 10, 120) providing a first output(Fig. 10; 184,80) representative of a first spectrum width measurement as measured by the bandwidth monitor and a second output(Fig. 10; 176,80) representative of a second spectrum width measurement measured by the optical bandwidth monitor; and,

an actual bandwidth calculation apparatus(Fig. 10, 197) utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor, to calculate an actual bandwidth parameter(column 6, line 48+).

With regard to claim 49, Das et al teach a photolithography tool comprising:

a laser light source(Fig. 4, 30) comprising:

a bandwidth meter(Fig. 10) for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

an optical bandwidth monitor(Fig. 10, 120) providing a first output(Fig. 10; 184,80) representative of a first parameter which is indicative of the bandwidth of the light emitted from the laser and a second output(Fig. 10; 176,80) representative of a second parameter which is indicative of the bandwidth of the light emitted from the laser; and,

an actual bandwidth calculation apparatus(Fig. 10, 197) utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor, to calculate an actual bandwidth parameter(column 6, line 48+).

With regard to claim 61, Das et al teach a photolithography light source(column 12, lines 19-23) comprising:

a bandwidth meter(Fig. 10) for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

an optical bandwidth monitor(Fig. 10, 120) providing a first output(Fig. 10; 184,80) representative of a first spectrum width measurement as measured by the optical bandwidth detector and a second output(Fig. 10; 176,80) representative of a second spectrum width measurement measured by the optical bandwidth detector; and,

an actual bandwidth calculation apparatus(Fig. 10, 197) utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor, to calculate an actual bandwidth parameter(column 6, line 48+).

With regard to claim 73, Das et al teach a bandwidth meter(Fig. 10) for measuring the bandwidth of a spectrum of light emitted from a laser input(Fig. 4, 30) to the bandwidth meter comprising:

an optical bandwidth monitoring means(Fig. 10, 120) for providing a first output(Fig. 10; 184,80) representative of a first parameter which is indicative of the bandwidth of the light emitted from the laser and a second output(Fig. 10; 176,80) representative of a second parameter which is indicative of the bandwidth of the light emitted from the laser; and,

an actual bandwidth calculation means(Fig. 10, 197), utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitoring means, for calculating an actual bandwidth parameter(column 6, line 48+).

With regard to claim 85, Das et al teach a bandwidth meter(Fig. 10) for measuring the bandwidth of a spectrum of light emitted from a laser input(Fig. 4, 30) to the bandwidth meter comprising:

an optical bandwidth monitoring means(Fig. 10, 120) for providing a first output(Fig. 10; 184,80) representative of a first spectrum width measurement as measured by the bandwidth detector and a second output(Fig. 10; 176,80) representative of a second spectrum width measurement measured by the optical bandwidth detection means; and,

an actual bandwidth calculation means(Fig. 10, 197), utilizing the first output and the second output as part of a multivariable linear equation employing predetermined calibration variables specific to the optical bandwidth monitoring means, for calculating calculate an actual bandwidth parameter(column 6, line 48+).

With regard to claim 97, Das et al teach a photolithography light source(column 12, lines 19-23) comprising:

a bandwidth meter means(Fig. 10) for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

an optical bandwidth monitoring means(Fig. 10, 120) for providing a first output(Fig. 10; 184,80) representative of a first parameter which is indicative of the bandwidth of the light emitted from the laser a second output(Fig. 10; 176,80) representative of a second parameter which is indicative of the bandwidth of the light emitted from the laser; and,

an actual bandwidth calculation means(Fig. 10, 197), utilizing the first output and the second output as part of a multivariable equation employing

predetermined calibration variables specific to the optical bandwidth monitoring means, for calculating an actual bandwidth parameter(column 6, line 48+).

With regard to claim 109, Das et al teach a photolithography light source(column 12, lines 19-23) comprising:

a bandwidth meter means(Fig. 10) for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

an optical bandwidth monitoring means(Fig. 10, 120) for providing a first output(Fig. 10; 184,80) representative of a first spectrum width measurement as measured by the bandwidth detector and a second output(Fig. 10; 176,80) representative of a second spectrum width measurement measured by the optical bandwidth detection means; and,

an actual bandwidth calculation means(Fig. 10, 197), utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitoring means, for calculating an actual bandwidth parameter(column 6, line 48+).

With regard to claim 121, Das et al teach a photolithography tool comprising:

a laser light source(Fig. 4, 30) comprising:

a bandwidth meter means(Fig. 10) for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:

an optical bandwidth monitoring means(Fig. 10, 120) for providing a first output(Fig. 10; 184,80) representative of a first parameter which is indicative of the bandwidth of the light emitted from the laser and a second output(Fig. 10; 176,80) representative of a second parameter which is indicative of the bandwidth of the light emitted from the laser; and,

an actual bandwidth calculation means(Fig. 10, 197), utilizing the first output and the second output as part of a multivariable linear equation employing predetermined calibration variables specific to the optical bandwidth monitoring means, for calculating an actual bandwidth parameter(column 6, line 48+).

With regard to claim 133, Das et al teach a photolithography light source(column 12, lines 19-23) comprising:

a bandwidth meter means(Fig. 10) for measuring the bandwidth of a spectrum of light emitted from a laser input(Fig. 4, 30) to the bandwidth meter comprising:

an optical bandwidth monitoring means(Fig. 10, 120) providing a first output(Fig. 10; 184,80) representative of a first spectrum width measurement as measured by the optical bandwidth monitoring means and a second

output(Fig. 10; 176,80) representative of a second spectrum width measurement measured by the optical bandwidth monitoring means; and,

an actual bandwidth calculation means(Fig. 10, 197), utilizing the first output and the second output as part of a multivariable linear equation employing predetermined calibration variables specific to the optical bandwidth monitoring means, for calculating an actual bandwidth parameter(column 6, line 48+).

With regard to claim 145, Das et al teach a method for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter(column 3, line 39- column 12, line 26) comprising:

utilizing an optical bandwidth monitor(column 3, line 39+),

providing a first output representative of a first parameter which is indicative of the bandwidth of the light emitted from the laser(column 3, line 65+) and a second output representative of a second parameter which is indicative of the bandwidth of the light emitted from the laser(column 7, line 44+); and,

in an actual bandwidth calculation apparatus(Fig. 10, 197),

utilizing the first output and the second output as part of a multivariable linear equation employing predetermined calibration variables specific to the optical bandwidth monitor(column 4, line 41; column 5, line 60; column 6, line 57),

calculating an actual bandwidth parameter(column 6, line 48+).

With regard to claim 146, Das et al teach a bandwidth meter(Fig. 10) for measuring the bandwidth of a spectrum of light emitted from a narrow band light source(Fig. 4, 30) input to the bandwidth meter comprising:

an optical bandwidth monitor(Fig. 10, 120) providing a first output(Fig. 10; 184,80) representative of a first parameter which is indicative of the bandwidth of the light emitted from the light source and a second output(Fig. 10; 176,80) representative of a second parameter which is indicative of the bandwidth of the light emitted from the light source; and,

an actual bandwidth calculation apparatus(Fig. 10, 197) utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor, to calculate an actual bandwidth parameter(column 6, line 48+).

As to claims 2, 14, 26, 38, 50, 62, 74, 86, 98, 110, 122, 134, and 147; the actual bandwidth parameter is a spectrum full width at some percent of the maximum within the full width of the spectrum of light emitted from the laser ("FWXM")(column 5, lines 27-34).

As to claims 3, 15, 27, 39, 51, 63, 75, 87, 99, 111, 123, 135, and 148; the actual bandwidth parameter is a width between two points on the spectrum defining a content of the spectrum enclosing some percentage of the energy of the full spectrum of the spectrum of light emitted from the laser ("EX")(column 9, lines 27-34).

With regard to claim 158, Das et al teach a bandwidth meter(Fig. 10) comprising:

an optically dispersive instrument(Fig. 10, 176), dispersing the energy comprising the output of an light source(Fig. 4, 30) into a spatial or temporal domain according to the wavelength distribution of the energy of the light source;

a detector(Fig. 10, 80), recording, respectively, the spatial or temporal variation of wavelength distribution of the energy and providing an output signal based upon the recorded spatial or temporal variation;

a first calculation apparatus(Fig. 10, 197), calculating the width of the wavelength distribution of the energy, respectively, in the space or time domain, based upon, respectively, the spatial or temporal variation of the wavelength distribution of the energy recorded by the detector, and converting, respectively, the spatial or temporal distribution into the wavelength domain according to the optical properties of the dispersive instrument; and

a second calculation apparatus(Fig. 10, 197), utilizing at least one width of the wavelength distribution of the energy in the wavelength domain, calculated by the first calculation apparatus, by applying the at least one width as an argument of a multivariable equation having predetermined calibration variables specific to the optical source, the dispersive instrument, the detector, and the at least one width taken as an argument(column 6, line 48+).

As to claim 159, the first calculation apparatus and the second calculation apparatus are the same calculation apparatus(Fig. 10, 197).

As to claims 162, 163, and 165; wherein the multivariable equation is evaluated to calculate an actual bandwidth parameter descriptive of the spectral distribution of the energy output by the light source selected from the group FWX*M, EX**(column 9, lines 27-34).

With regard to claims 1-3, 13-15, 25-27, 37-39, 49-51, 61-63, 158-159, 162, 163, and 165; the functional limitation "utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor" is met by the prior art if the structure of the prior art is capable of performing the claimed functions. The computer 197 would have been capable of performing a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor. Note that Das et al teach this function(column 4, line 41; column 5, line 60; column 6, line 57). For functional language to limit an apparatus claim the limitation must be claimed using a "means-plus-function" format of 35 U.S.C. § 112, sixth paragraph.

2114 [R-1] Apparatus and Article Claims — Functional Language

APPARATUS CLAIMS MUST BE STRUCTURALLY DISTINGUISHABLE FROM THE PRIOR ART

While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior

art in terms of structure rather than function. In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also In re Swinehart, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971); In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "[A]pparatus claims cover what a device is, not what a device does." Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original).

With regard to claims 73-75, 85-87, 97-99, 109-111, 121-123, 133-135; while these claims are written in means-plus-function format the phrase "utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitoring means" does not appear to be part of the means-plus-function limitation claimed, see the rejection under 35 U.S.C. § 112, second paragraph, above. Therefor the claimed limitations are met by Das et al.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-6, 13-18, 25-30, 37-42, 49-54, 61-66, 73-78, 85-90, 97-102, 109-114, 121-126, 133-138, and 146-151 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6, and 37-42 of U.S. Patent No. 6,952,267. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed subject matter of U.S. Patent No. 6,952,267 anticipates the claimed limitations of the instant application.

1. A bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:(6,952,267; claim 1, lines 16-18)

an optical bandwidth monitor providing a first output representative of a first parameter which is indicative of the bandwidth of the light emitted from the laser(6,952,267; claim 1, lines 19-22) and a second output representative of a second parameter which is indicative of the bandwidth of the light emitted from the laser(6,952,267; claim 1, lines 23-27); and,

an actual bandwidth calculation apparatus utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor, to calculate an actual bandwidth parameter(6,952,267; claim 1, lines 28-33).

13. A bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:(6,952,267; claim 1, lines 16-18)

an optical bandwidth monitor providing a first output representative of a first spectrum width measurement as measured by the optical bandwidth monitor(6,952,267; claim 1, lines 19-22) and a second output representative of a second spectrum width measurement measured by the optical bandwidth monitor(6,952,267; claim 1, lines 23-27); and,

an actual bandwidth calculation apparatus utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor, to calculate an actual bandwidth parameter(6,952,267; claim 1, lines 28-33).

25. A photolithography light source comprising: (6,952,267; claim 37, line 39)

a bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising: (6,952,267; claim 37, lines 41-43)

an optical bandwidth monitor providing a first output representative of a first parameter which is indicative of the bandwidth of the light emitted from the laser(6,952,267; claim 37, lines 44-48) and a second output representative of a second parameter which is indicative of the bandwidth of the light emitted from the laser(6,952,267; claim 37, lines 49-53); and,

an actual bandwidth calculation apparatus utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor, to calculate an actual bandwidth parameter(6,952,267; claim 37, lines 54-62).

37. A photolithography light source comprising: (6,952,267; claim 37, line 39)

a bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising: (6,952,267; claim 37, lines 41-43)

an optical bandwidth monitor providing a first output representative of a first spectrum width measurement as measured by the bandwidth monitor(6,952,267; claim 37, lines 44-48) and a second output representative of a second spectrum width measurement measured by the optical bandwidth monitor(6,952,267; claim 37, lines 49-53); and,

an actual bandwidth calculation apparatus utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor, to calculate an actual bandwidth parameter(6,952,267; claim 37, lines 54-62).

49. A photolithography tool comprising: (6,952,267; claim 37, line 39)

a laser light source comprising: (6,952,267; claim 37, line 40)

a bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising: (6,952,267; claim 37, lines 41-43)

an optical bandwidth monitor providing a first output representative of a first parameter which is indicative of the bandwidth of the light emitted from the laser(6,952,267; claim 37, lines 44-48) and a second output representative of a second parameter which is indicative of the bandwidth of the light emitted from the laser(6,952,267; claim 37, lines 49-53); and,

an actual bandwidth calculation apparatus utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor, to calculate an actual bandwidth parameter(6,952,267; claim 37, lines 54-62).

61. A photolithography light source comprising: (6,952,267; claim 37, line 39)

a bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising: (6,952,267; claim 37, lines 41-43)

an optical bandwidth monitor providing a first output representative of a first spectrum width measurement as measured by the optical bandwidth detector(6,952,267; claim 37, lines 44-48) and a second output representative

of a second spectrum width measurement measured by the optical bandwidth detector(6,952,267; claim 37, lines 49-53); and,

an actual bandwidth calculation apparatus utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor, to calculate an actual bandwidth parameter(6,952,267; claim 37, lines 54-62).

73. A bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:(6,952,267; claim 1, lines 16-18)

an optical bandwidth monitoring means for providing a first output representative of a first parameter which is indicative of the bandwidth of the light emitted from the laser(6,952,267; claim 1, lines 19-22) and a second output representative of a second parameter which is indicative of the bandwidth of the light emitted from the laser(6,952,267; claim 1, lines 23-27); and,

an actual bandwidth calculation means, utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitoring means, for calculating an actual bandwidth parameter(6,952,267; claim 1, lines 28-33).

85. A bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising:(6,952,267; claim 1, lines 16-18)

an optical bandwidth monitoring means for providing a first output representative of a first spectrum width measurement as measured by the bandwidth detector(6,952,267; claim 1, lines 19-22) and a second output representative of a second spectrum width measurement measured by the optical bandwidth detection means(6,952,267; claim 1, lines 23-27); and,

an actual bandwidth calculation means, utilizing the first output and the second output as part of a multivariable linear equation employing predetermined calibration variables specific to the optical bandwidth monitoring means, for calculating calculate an actual bandwidth parameter(6,952,267; claim 1, lines 28-33).

97. A photolithography light source comprising: (6,952,267; claim 37, line 39)

a bandwidth meter means for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising: (6,952,267; claim 37, lines 41-43)

an optical bandwidth monitoring means for providing a first output representative of a first parameter which is indicative of the bandwidth of the light emitted from the laser(6,952,267; claim 37, lines 44-48) a second output

representative of a second parameter which is indicative of the bandwidth of the light emitted from the laser(6,952,267; claim 37, lines 49-53); and,

an actual bandwidth calculation means, utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitoring means, for calculating an actual bandwidth parameter(6,952,267; claim 37, lines 54-62).

109. A photolithography light source comprising: (6,952,267; claim 37, line 39)

a bandwidth meter means for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising: (6,952,267; claim 37, lines 41-43)

an optical bandwidth monitoring means for providing a first output representative of a first spectrum width measurement as measured by the bandwidth detector(6,952,267; claim 37, lines 44-48) and a second output representative of a second spectrum width measurement measured by the optical bandwidth detection means(6,952,267; claim 37, lines 49-53); and,

an actual bandwidth calculation means, utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth

monitoring means, for calculating an actual bandwidth parameter(6,952,267; claim 37, lines 54-62).

121. A photolithography tool comprising: (6,952,267; claim 37, line 39)

a laser light source comprising: (6,952,267; claim 37, line 40)

a bandwidth meter means for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising: (6,952,267; claim 37, lines 41-43)

an optical bandwidth monitoring means for providing a first output representative of a first parameter which is indicative of the bandwidth of the light emitted from the laser(6,952,267; claim 37, lines 44-48) and a second output representative of a second parameter which is indicative of the bandwidth of the light emitted from the laser(6,952,267; claim 37, lines 49-53); and,

an actual bandwidth calculation means, utilizing the first output and the second output as part of a multivariable linear equation employing predetermined calibration variables specific to the optical bandwidth monitoring means, for calculating an actual bandwidth parameter(6,952,267; claim 37, lines 54-62).

133. A photolithography light source comprising: (6,952,267; claim 37, line 39)

a bandwidth meter means for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising: (6,952,267; claim 37, lines 41-43)

an optical bandwidth monitoring means providing a first output representative of a first spectrum width measurement as measured by the optical bandwidth monitoring means(6,952,267; claim 37, lines 44-48) and a second output representative of a second spectrum width measurement measured by the optical bandwidth monitoring means(6,952,267; claim 37, lines 49-53); and,

an actual bandwidth calculation means, utilizing the first output and the second output as part of a multivariable linear equation employing predetermined calibration variables specific to the optical bandwidth monitoring means, for calculating an actual bandwidth parameter(6,952,267; claim 37, lines 54-62).

146. A bandwidth meter for measuring the bandwidth of a spectrum of light emitted from a narrow band light source input to the bandwidth meter comprising: (6,952,267; claim 1, lines 16-18)

an optical bandwidth monitor providing a first output representative of a first parameter which is indicative of the bandwidth of the light emitted from the light source(6,952,267; claim 1, lines 19-22) and a second output representative of a

second parameter which is indicative of the bandwidth of the light emitted from the light source(6,952,267; claim 1, lines 23-27); and,

an actual bandwidth calculation apparatus utilizing the first output and the second output as part of a multivariable equation employing predetermined calibration variables specific to the optical bandwidth monitor, to calculate an actual bandwidth parameter(6,952,267; claim 1, lines 28-33).

145. A method for measuring the bandwidth of a spectrum of light emitted from a laser input to the bandwidth meter comprising: (6,952,267; claim 145, lines 18-20)

utilizing an optical bandwidth monitor, providing a first output representative of a first parameter which is indicative of the bandwidth of the light emitted from the laser(6,952,267; claim 145, lines 21-25) and a second output representative of a second parameter which is indicative of the bandwidth of the light emitted from the laser(6,952,267; claim 145, lines 26-30); and,

in an actual bandwidth calculation apparatus, utilizing the first output and the second output as part of a multivariable linear equation employing predetermined calibration variables specific to the optical bandwidth monitor(6,952,267; claim 145, lines 31-35),

calculating an actual bandwidth parameter(6,952,267; claim 145, lines 35-38).

As to claims 2, 14, 26, 38, 50, 62, 74, 86, 98, 110, 122, 134, and 147; the actual bandwidth parameter is a spectrum full width at some percent of the maximum within the full width of the spectrum of light emitted from the laser ("FWXM")(6,952,267; claim 2; claim 38).

As to claims 3, 15, 27, 39, 51, 63, 75, 87, 99, 111, 123, 135, and 148; the actual bandwidth parameter is a width between two points on the spectrum defining a content of the spectrum enclosing some percentage of the energy of the full spectrum of the spectrum of light emitted from the laser ("EX")(6,952,267; claim 3; claim 39).

As to claims 4-6, 16-18, 28-30, 40-42, 52-54, and 149-151; the bandwidth monitor is an etalon and the first output is representative of at least one of a width of a fringe of an optical output of the etalon at FWXM or a width between two points on the spectrum enclosing some percentage of the energy of the full spectrum of light emitted from the laser ("EX'") and the second output is representative of at least one of a second FWX"M or EX'", where X≠X" and X'≠X'"(6,952,267; claims 4-6; claims 40-42).

Allowable Subject Matter

Claims 160 and 161 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 164 is dependent from claim 160 and therefor is also included.

Claims 4-6, 16-18, 28-30, 40-42, 52-54, 64-66, 76-78, 88-90, 100-102, 112-114, 124-126, 136-138, and 149-151 contain limitations to the bandwidth monitor which would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. § 112, second paragraph, and/or Double Patenting set forth in this Office action. Claims 7-12, 19-24, 31-36, 43-48, 55-60, 67-72, 79-84, 91-96, 103-108, 115-120, 127-132, 139-144, and 152-157 are dependent from claims 4-6, 16-18, 28-30, 40-42, 52-54, 64-66, 76-78, 88-90, 100-102, 112-114, 124-126, 136-138, and 149-151 and therefor are also included.

With regard to claims 4-6, 16-18, 28-30, 40-42, 52-54, 64-66, 76-78, 88-90, 100-102, 112-114, 124-126, 136-138, 149-151, 160, and 161; the prior art of record fails to teach the limitation of a bandwidth monitor etalon providing a first output having a signal at FWXM or EX' and a second output having a signal at FWX"M or EX"', where X≠X" and X'≠X"' in combination with the remaining limitations of the claims from which they depend.

Relevant Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Colbourne et al(5,796,859), see figures 1 and 6; Hamada(5,970,076), see figure 1; and Munks(6,587,214), see figure 9.

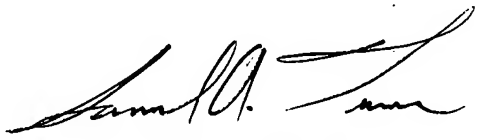
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A. Turner whose phone number is 571-272-2432.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached on 571-272-2800 ext. 77.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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